

NON-PUBLIC?: N
ACCESSION #: 8812140231
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Clinton Power Station PAGE: 1 OF 4

DOCKET NUMBER: 05000461

TITLE: Main Power Transformer Fault Results in Turbine Generator Trip and a
Reactor Scram
EVENT DATE: 11/11/88 LER #: 88-028-00 REPORT DATE: 12/09/88

OPERATING MODE: 1 POWER LEVEL: 086

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: R. F. Schaller, Assistant Manager -
Plant Operations X3205 TELEPHONE: 217-935-8881

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: EL COMPONENT: XFMR MANUFACTURER: G080
REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On November 11, 1988, with the plant in Mode 1 (POWER OPERATION), the "C" phase Main Power Transformer (MPT "C") failed causing a generator-to-transformer differential relay trip of the main generator. The trip of the main generator resulted in a turbine trip and an automatic reactor scram because of the turbine control valve fast closure signal. The cause of this event is attributed to an internal fault on the high voltage side of the transformer. The MPT "C" was replaced with a spare transformer of the same type and manufacturer. Electrical tests and oil samples of the MPT "A", "B" and the spare transformer indicated acceptable insulation levels and dissolved gas contents. The results from the tests and samples indicate that the three main power transformers are in satisfactory condition. Illinois Power will perform a visual inspection of the MPT "C" and perform tests to determine the extent of the fault and the scope of the necessary repairs. The existing preventive maintenance requirements for the main power transformers will be evaluated to determine if changes are warranted.

END OF ABSTRACT

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DESCRIPTION OF EVENT

On November 1988, at 2002 hours, with the plant in Mode 1 (POWER OPERATION), at 86% reactor RCT! power, a turbine generator TG! trip occurred which resulted in an automatic reactor RCT! scram.

At 2002 hours on November 11, 1988, the "C" phase Main Power Transformer (MPT "C") XFMR! experienced a phase-to-ground overcurrent fault. The fault caused a generator-to-transformer differential relay trip of the main generator GEN!. The trip of the main generator resulted in a main turbine TRB! trip and an automatic reactor scram because of the turbine control valve V! fast closure signal. The turbine trip was followed by the completion of an automatic transfer of nonsafety busses BU! to the Reserve Auxiliary Transformer as designed. The safety busses were already being supplied by their normal source, the Reserve Auxiliary Transformer.

At 2002 hours, the Fire Protection deluge system automatically initiated in the MPT "C" area. Security personnel alerted the Main Control Room at approximately 2004 hours that a fire was in progress on the MPT "C". The Fire Brigade was dispatched. A fire had started from oil which erupted from the MPT "C" transformer bushing. The fire was on top of the MPT "C" and above the level of the automatic deluge spray. The deluge system is designed to preclude spraying the high voltage bushing. The Fire Brigade extinguished the fire within approximately 30 minutes. When the fire had been extinguished the automatic deluge system was secured and a reflash watch was set.

At 2012 hours, the Shift Supervisor declared an Unusual Event based on the fire lasting longer than 10 minutes. The Unusual Event was terminated at 2136 hours and the reflash watch was secured at 2200 hours.

No other automatic or manually initiated safety system, responses were necessary to place the plant in a safe and stable condition. No other equipment or components were inoperable at the start of this event such that their inoperable condition contributed to this event.

CAUSE OF EVENT

The cause of this event is attributed to an internal fault on the high voltage side of the main power transformer. The internal fault resulted in the failure of the MPT "C".

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CORRECTIVE ACTION

The MPT "C" was replaced with a spare transformer of the same type and manufacturer. Electrical tests were performed and oil samples were obtained and analyzed for the MPT "A", "B", and the spare transformer. The results of the electrical tests and oil samples indicated acceptable insulation levels and acceptable dissolved gas contents. The results from the tests and samples indicate that the three main power transformers are in satisfactory condition.

Illinois Power will perform a visual inspection of the MPT "C" and perform tests to determine the extent of the fault and the scope of the necessary repairs. As a result of the inspection and tests, the existing preventive maintenance requirements for the main power transformers, oil sampling and analysis, will be evaluated to determine if changes are warranted. These actions are scheduled to be completed by May 1, 1989.

If the results of the visual inspection or testing of the MPT "C" significantly change the information provided in this report, IP will submit a supplemental report.

ANALYSIS OF EVENT

This event is reportable under the provisions of 10CFR50.73(a)(2) (iv) due to an automatic actuation of the Reactor Protection System.

The MPT "C" became inoperable at 2002 hours on November 11, 1988. The MPT "C" was replaced with the spare main transformer and returned to an operable status at approximately 1200 hours on November 23, 1988. Criticality was reached at 0440 hours on November 23, 1988 and the main generator was synchronized to the grid at 0830 hours on November 25, 1988.

Assessment of the safety consequences and implications of this event indicates that this event was not safety significant. All equipment responses to the transient occurred as designed. Reactor water level was controlled without the use of Emergency Core Cooling Systems. Reactor pressure was controlled by the turbine bypass valves, and no main steam line safety relief valves RV1 lifted.

This transient was compared to a similar transient, Generator Load Rejection with Bypass, described in Chapter 15 of the Updated Safety Analysis Report and the Transient Safety Analysis Design Report (GEZ-7355), and was found to be within the design basis of the plant.

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ADDITIONAL INFORMATION

The Main Power Transformer "C" discussed in this LER is a General Electric model 390E648, single phase, 310/347 MVA, forced oil and air, 60 Hertz, with a low voltage of 22,000 V and a high voltage side of 345,000.

No previous reactor scrams have occurred as a result of the same cause.

For further information regarding this event, contact R. F. Schaller, Assistant Manager - Plant Operations at (217) 935-8881, extension 3205.

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U-601321
L45-88(12-09)-LP
2C.220

ILLINOIS POWER COMPANY

CLINTON POWER STATION, P.O. BOX 678,
CLINTON, ILLINOIS 61727

December 9, 1988

10CFR50.73

Docket No. 50-461

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: Clinton Power Station - Unit 1
Licensee Event Report No. 88-028-00

Dear Sir:

Please find enclosed Licensee Event Report No. 88-028-00: Main Power Transformer Fault Results in Turbine Generator Trip and a Reactor Scram. This report is being submitted in accordance with the requirements of 10CFR50.73.

Sincerely yours,

D. L. Holtzsch

Acting Manager - Licensing and
Safety

LRH/krm

Enclosure

cc: NRC Resident Office
NRC Region III, Regional Administrator
INPO Records Center
Illinois Department of Nuclear Safety
NRC Clinton Licensing Project Manager

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